

Total number of printed pages-4

1 (Sem-4) ZLG 3

2025

ZOOLOGY

Paper : ZLG0400304

(Principles of Ecology and Evolution)

Full Marks : 45

Time : Two hours

The figures in the margin indicate full marks for the questions.

Write the answer to the two Parts in separate books.

Q. No. 1 is compulsory for both Part-A and Part-B.

Part-A

(Principles of Ecology)

1. Choose the correct answer : $1 \times 3 = 3$

(a) _____ is the study of the ecology of a single species.

- (i) Autecology
- (ii) Oncology
- (iii) Synecology
- (iv) All of the above

(b) _____ consists of different populations living together and interacting with one another as competitors, predators and prey etc.

- (i) Community
- (ii) Organism
- (iii) Ecosystem
- (iv) Biome

(c) Which of the following is NOT a true characteristic of a population?

- (i) Natality
- (ii) Mortality
- (iii) Sex-ratio
- (iv) Stratification

2. Write short notes on : **(any three)** $2 \times 3 = 6$

- (a) Synecology
- (b) Energy flow in an ecosystem
- (c) Gause's Principle of competitive exclusion
- (d) Ecotone
- (e) Food Web

3. Answer briefly : **(any two)** $5 \times 2 = 10$

- (a) Explain the different types of functional attributes of a ecosystem.
- (b) Discuss the concepts of life table and survivorship curve. $2\frac{1}{2} + 2\frac{1}{2} = 5$

(c) What do you understand by the term 'community'? What are the characteristics of a community? Briefly highlight the structure of a community. $1+2+2=5$

(d) What do you understand by the term 'ecosystem'? Write briefly on *any two* types of ecosystems with necessary examples. $1+2+2=5$

4. Answer elaborately : **(any one)** $10 \times 1 = 10$

(a) Define biotic potential. What is population regulation? Discuss the density-dependent factors of population regulation. $1+2+7=10$

(b) What is ecological succession? Explain the different types of succession processes highlighting necessary examples. Briefly add a note on *any one* important theory related to the formation of a climax community. $2+6+2=10$

Part-B (Evolution)

1. Choose the correct answer : $1 \times 2 = 2$

(a) Which one of the following is a protocell?

- (i) Coacervate
- (ii) Microsphere
- (iii) Tobacco Mosaic Virus
- (iv) Both (i) and (ii)

(b) Which era is considered as the age of reptiles in the geological timescale?

- (i) Cenozoic
- (ii) Mesozoic
- (iii) Paleozoic
- (iv) Proterozoic

2. Write short notes on : **(any two)** $2 \times 2 = 4$

- (a) Lamarckism
- (b) RNA World Hypothesis
- (c) Founder effect
- (d) Selection coefficient

3. Answer briefly : **(any two)** $5 \times 2 = 10$

- (a) Briefly highlight the pattern of evolution of horse with necessary diagrams.
- (b) What do you understand by chemogeny with respect to origin of life? Briefly explain the possible pathways of origin of basic biomolecules. $1 + 4 = 5$
- (c) What do you understand by genetic drift? Explain briefly with appropriate examples. $1 + 4 = 5$
- (d) What is the principle behind the establishment of Hardy-Weinberg Law? Derive the Hardy-Weinberg Law with any example of your choice.